This document gives pertinent information concerning reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.060 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1.	Facility Name and Mailing Address:	Rush River Wastewater Treatment Plant 485 Gay Street Washington, VA 22747	SIC Code :	4952 WWTP
	Facility Location:	564 Warren Ave Washington, VA 22747	County:	Rappahannock
	Facility Contact Name:	Donald Hearl	Telephone Number:	(540) 825-6660
	Facility E-mail Address:	donh@ess-services.com		
2.	Permit No.:	VA0091651	Expiration Date of previous permit:	31 May 2016
	Other VPDES Permits associated with this facility:		VAN020108	
	Other Permits associated with this facility:		None	
	E2/E3/E4 Status:	Not Applicable		
3.	Owner Name:	Town of Washington		
	Owner Contact/Title:	John Sullivan/Mayor	Telephone Number:	(540) 675-3128
	Owner E-mail Address:	jsullivan@nationaljournal.com		
4.	Application Complete Date:	15 December 2015		
	Permit Drafted By:	Caitlin Shipman	Date Drafted:	2/3/2016
	Draft Permit Reviewed By:	Doug Frasier	Date Reviewed:	2/5/2016
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	2/22/2016
	Public Comment Period :	Start Date: 3/24/2016	End Date:	4/23/2016

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination.

Receiving Stream Name :	Rush River	Stream Code:	3-RUS
Drainage Area at Outfall:	14.7 sq.mi.	River Mile:	5.65 (determined relative to upstream monitoring station)
Stream Basin:	Rappahannock	Subbasin:	None
Section:	4	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-E05R; RA12
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.969 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.775 MGD
30Q10 Low Flow:	0.058 MGD	30Q10 High Flow:	1.74 MGD
Harmonic Mean Flow:	Undefined	30Q5 Flow:	0.13 MGD

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law	X	EPA Guidelines
X	Clean Water Act	X	Water Quality Standards

X	VPDES Permit Regulation		Other (PES, Occoquan Policy, Dulles)
X	EPA NPDES Regulation		

7. Licensed Operator Requirements: Class III

8. Reliability Class: Class I

9. Permit Characterization:

	Private		Effluent Limited		Possible Interstate Effect
	Federal	X	Water Quality Limited		Compliance Schedule Required
	State		Whole Effluent Toxicity Program Required		Interim Limits in Permit
X	POTW		Pretreatment Program Required		Interim Limits in Other Document
X	TMDL	X	e-DMR Participant		

10. Wastewater Sources and Treatment Description:

This facility primarily treats domestic wastewater from the Town of Washington. Additionally, a small portion of the wastewater treated is from restaurants in the Town of Washington. Influent travels through a manual bar screen before entering one of two Sequencing Batch Reactors (SBR) for biological treatment. In the SBRs, wastewater is equalized and aerated. When the influent cannot support a large enough biological community, a nutrient supplement may be added. Phosphorus is removed from the wastewater by the addition of poly-aluminum chloride (PAC). According to the facility's operator, phosphorus treatment switched to PAC from liquid alum approximately two years ago. The operator believes that the liquid alum was not dissolving completely and causing non-compliance with the TSS limit.

Waste activated sludge (WAS) from the SBRs is pumped to a holding tank and hauled to Remington Waste Water Treatment Plant (VA0076805) for disposal. Supernatant of the WAS may be recycled by a reject pump station and added back to the influent. From the SBRs, wastewater moves to a holding tank before being pumped into a tertiary sand filter and disinfected by ultraviolet light. The final effluent pump station pumps the effluent to the flow meter and through Outfall 001 to Rush River. At the outfall, effluent is released in batches, with approximately 4 minutes of flow every 28 minutes.

The CTO for this facility was issued on 21 April 2010. The first discharge occurred on 26 April 2010.

See Attachment 2 for a facility diagram.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic and/or Commercial Wastewater	See Item 10 above.	0.06 MGD	**38° 42' 47.4" N** **78° 09' 4.1" W**
See Attachment 3 for (Washington Quad, DEQ #197B) topographic map.				

11. Sludge Treatment and Disposal Methods:

Sludge is wasted to a sludge holding tank and hauled by an approved contractor, Butler and Fisch (Federal #651319024), to Remington Waste Water Treatment Plant (VA0076805) for disposal.

12. Discharges, Intakes, Monitoring Stations, Other Items (Located Within Waterbody VAN-E05R)

TABLE 2 – Discharges, Intakes & Monitoring Stations			
ID/Permit Number	**Facility Name**	**Type**	**Receiving Stream**
VA0022471	Rappahannock County Elementary School	Municipal	Rush River, UT
VA0062880	Sperryville Sewage Treatment Plant		Thornton River
VA0064181	Rappahannock County High School		Covington River, UT
VAG406499	FT Valley Store Apartment and Rental House	Small Domestic ≤1,000 gpd	Beaverdam Creek, UT
3-RUS005.24	DEQ Monitoring Station at Route 626	Ambient	Rush River
3-RUS005.66	DEQ Monitoring Station at Route 683	Biological	Rush River
3-RUS006.49	DEQ Monitoring Station at Route 628		Rush River
3-RUS007.41	DEQ Monitoring Station at Route 624	Ambient and Biological	Rush River

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	**Volume Stored**	**Spill/Stormwater Prevention Measures**
PAC	Four 55-gallon drums	Stored in dedicated chemical feed room with a floor drain that connects to an influent manhole and then to the WWTP.
Soda Ash	1,000 lb	
Liquid Polymer	One 55-gallon drum	

14. Site Inspection:

Performed by Lisa Janovsky on 13 January 2016 (see Attachment 4). Water permitting staff Caitlin Shipman and Alison Thompson, from DEQ's Northern Regional Office, were on site during the inspection.

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

This facility discharges to Rush River. DEQ ambient monitoring station 3-RUS005.66 is located at Route 683, approximately 0.01 mile upstream from this facility. The following is the water quality summary for this segment of the Rush River, as taken from the Draft 2014 Integrated Report:

Class III, Section 4.

DEQ monitoring stations located in this segment of Rush River:

- ambient monitoring station 3-RUS005.24, at Route 626
- biological monitoring station 3-RUS005.66, at Route 683
- biological monitoring station 3-RUS006.49, at Route 628
- ambient and biological monitoring station 3RUS007.41, at Route 624

DEQ *E. coli* monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This segment is included in the Bacteria Total Maximum Daily Load Development for the Rappahannock River Basin, approved by EPA on 01/23/2008. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4. Information on Receiving Stream 303(d) Impairments and TMDLS						
Waterbody Name	**Impaired Use**	**Cause**	**TMDL completed**	**WLA**	**Basis for WLA**	**TMDL Schedule**
Impairment Information in the DRAFT 2014 Integrated Report						
Rush River	Recreation	*E. coli*	Rappahannock River Basin Bacteria TMDL 01/23/2008	1.04E+11 cfu/year *E. coli*	126 cfu/100 ml *E. coli* --- 0.06 MGD	---

This facility discharges directly to Rush River; located within the Chesapeake Bay watershed. The receiving stream has been addressed in the Chesapeake Bay TMDL, completed by the Environmental Protection Agency (EPA) on December 29, 2010. The TMDL addresses dissolved oxygen (D.O.), chlorophyll a and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tidal tributaries by establishing non-point source load allocations (LAs) and point-source waste load allocations (WLAs) for total nitrogen (TN), total phosphorus (TP) and total suspended solids (TSS) to meet applicable Virginia Water Quality Standards contained in 9VAC25-260-185.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet water quality standards and to be consistent with the assumptions and requirements of applicable WLAs. DEQ has provided coverage under the VPDES Nutrient General Permit (GP) for this facility under permit VAN020108. The requirements of the Nutrient GP currently in effect for this facility are consistent with the Chesapeake Bay TMDL. This individual permit includes TSS limits that are also consistent with the Chesapeake Bay TMDL and WIP. In addition, the individual permit addresses limitations for the protection of instream dissolved oxygen concentrations as detailed in Section 19 of this Fact Sheet. The proposed effluent limits within this individual permit are consistent with the Chesapeake Bay TMDL and will not cause an impairment or observed violation of the standards for D.O., chlorophyll a or SAV as required by 9VAC25-260-185.

The tidal Rappahannock River, which is located approximately 70 miles downstream of this facility, is listed with a PCB impairment. In support for the PCB TMDL for the tidal Rappahannock River, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal discharger. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a new wastewater treatment facility that treats primarily domestic wastewater and is located approximately 70 miles upstream from the PCB impairment. Based on this information, this facility will not be requested to monitor for low-level PCBs.

The full planning statement is found in Attachment 5.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Rush River, is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis (see Attachment 6 for the MSTRANTI spreadsheet) details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the temperature and pH and Total Hardness of the stream and final effluent. The stream and final effluent values used as part of Attachment 6 are as follows:

pH and Temperature for Ammonia Criteria:
The freshwater, aquatic life Water Quality Criteria for Ammonia is dependent on the instream temperature and pH. Since the effluent may have an impact on the instream values, the temperature and pH values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile temperature and pH values are used because they best represent the critical conditions of the receiving stream.

In-stream monitoring data was collected by the permittee during the previous permit term and are presented in Attachment 7. Monitoring took place during August and September in order to determine water quality during the most critical stream conditions. Since pH values collected are representative of the stream's most critical condition, staff determined the data could be used to calculate ammonia criteria. The 90th percentile pH value is 7.9 S.U.

In-stream monitoring did not occur frequently enough to determine a 90th percentile annual temperature or 90th percentile winter temperature. Therefore the temperature data collected from in-stream monitoring was not used to calculate ammonia criteria. When no data is available, DEQ guidance suggests using 25° C for the 90th percentile annual value and 15° C for the 90th percentile wet season value.

The permittee provided the daily pH and temperature data for the past five years, which has been used to calculate the pH and temperature values reported in the monthly DMRs. This data was used to calculate effluent information used to determine the ammonia criteria for the receiving stream (see Attachment 8). The 90th percentile annual effluent temperature is 28.5° C and the 90th percentile wet season effluent temperature is 23.9° C. The 90% maximum pH value is 7.88 S.U. and the 10% maximum pH value is 7.47 S.U.

Total Hardness for Hardness-Dependent Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's total hardness (expressed as mg/L calcium carbonate) as well as the total hardness of the final effluent.

There is no hardness data for this facility/receiving stream. Staff guidance suggests using a default hardness value of 50 mg/L CaCO3 for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 6 are based on this default value.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean[1]
Freshwater *E. coli* (N/100 ml)	126

[1]For a minimum of four weekly samples [taken during any calendar month].

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Rush River, is located within Section 4 of the Rappahannock River Basin. This section has not been designated with a special standard.

e. Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on 22 December 2015 for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Shenandoah Salamander (Plethodon Shenandoah), Northern Long-eared Bat (Myotis septentrionalis), Peregrine Falcon (Falco peregrines), Upland Sandpiper (Bartramia longicauda), Loggerhead Shrike (Lanius ludovicianus), Appalachian Grizzled Skipper (Pyrgus Wyandot), Green Floater (Lasmigona subviridis), Migrant Loggerhead Shrike (Lanius ludovicianus migrans). The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened and endangered species found near the discharge.

In addition, the Virginia Department of Conservation and Recreation was coordinated with during this reissuance per the procedures set forth in the 2007 Memorandum of Understanding (MOU) concerning *Threatened and Endangered Species Screening for VPDES Permits.* The purpose of this coordination is to obtain input from other agencies during the permitting

process to ascertain potential adverse impacts to threatened and endangered species and/or their habitats.

Any comments from this agency are located in Section 26 of this Fact Sheet.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream was classified as Tier 2 during the 2006 permit issuance based on an evaluation of ambient data for pH, temperature, and dissolved oxygen. No significant degradation to the existing water quality will be allowed. In accordance with current DEQ guidance, no significant lowering of water quality is to occur where permit limits are based on the following:

- The dissolved oxygen in the receiving stream is not lowered more than 0.2 mg/L from the existing levels;
- The pH of the receiving stream is maintained within the range 6.0-9.0 S.U.;
- There is compliance with all temperature criteria applicable to the receiving stream;
- No more than 25% of the unused assimilative capacity is allocated for toxic criteria established for the protection of aquatic life; and
- No more than 10% of the unused assimilative capacity is allocated for criteria for the protection of human health.

The antidegradation policy also prohibits the expansion of mixing zones to Tier 2 waters unless the requirements of 9VAC25-260-30.A.2 are met. The draft permit is not proposing an expansion of the existing mixing zone.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLAs) are calculated.

Rush River is considered a permanent stream and only runs dry in the case of an extreme drought. At the time of permit issuance, the public was concerned about the discharge's effect on Rush River. Therefore, DEQ staff decided to be conservative and assume critical 7Q10, 1Q10 and 30Q10 flows to be zero. It is staff's best professional judgment that this continues with this permit's reissuance.

Since the critical 7Q10, 1Q10 and 30Q10 flows have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Ammonia effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the thirty-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency and statistical characteristics of the effluent data.

a. Effluent Screening:
Effluent data obtained from August 2011 to November 2015 Discharge Monitoring Reports has been reviewed and determined to be suitable for evaluation. (See Attachment 8 for specific data)

Ammonia (as N) was the only pollutant that required a wasteload allocation analysis. Total Residual Chlorine will not be analyzed since the facility uses UV disinfection.

b. Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co\,[\,Qe + (\,f\,)(Qs\,)\,] - [\,(\,Cs\,)(\,f\,)(\,Qs\,)\,]}{Qe}$$

Where:
- WLA = Wasteload allocation
- Co = In-stream water quality criteria
- Qe = Design flow
- f = Decimal fraction of critical flow from mixing evaluation
- Qs = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- Cs = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10, 1Q10, and 30Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the Co.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels.

With regard to the Outfall 001 discharge, ammonia as N be may present since this is a WWTP treating sewage.

Antidegradation Wasteload Allocations (AWLAs).

Since the receiving stream has been determined to be a Tier II water, staff must also determine antidegradation wasteload allocations (AWLAs). The steady state complete mix equation is used substituting the antidegradation baseline (C_b) for the in-stream water quality criteria (C_o):

$$AWLA = \frac{Cb\,(\,Qe + Qs\,) - (\,Cs\,)(\,Qs\,)}{Qe}$$

Where:
- AWLA = Antidegradation-based wasteload allocation
- Cb = In-stream antidegradation baseline concentration
- Qe = Design flow
- Qs = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- Cs = Mean background concentration of parameter in the receiving stream.

Calculated AWLAs for the pollutants noted in b. above are presented in Attachment 6.

c. Effluent Limitations Toxic Pollutants, Outfall 001–

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with (A)WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

Staff reevaulated pH and temperature and concluded it is different than what was previously used to derive ammonia criteria. As a result, staff used the new data to determine new ammonia water quality criteria and new wasteload allocations (WLAs).

Effluent data did not include ammonia, therefore staff followed DEQ guidance in order to determine the distribution of effluent data and the reasonable potential for the discharge to cause or contribute to a violation of ammonia criteria. DEQ guidance suggests using a sole data point of 9.0 mg/L to ensure the evaluation adequately addresses the potential presence of ammonia in a discharge containing domestic sewage (see Attachment 9).

Staff evaluated in-stream monitoring data submitted by the permittee during the last permit term. In-stream monitoring showed that ammonia was not present above quantification level (<0.10 mg/L) downstream of the discharge during critical stream conditions. An occurrence of ammonia at 0.14 mg/L was noted in August 2011 upstream of the discharge (see Attachment 7).

Effluent monitoring shows that the since the last permit reissuance, the facility has had an average TKN value of 1.54 mg/L and a 90% maximum value of 2.31 mg/L. Effluent monitoring also shows that since the last permit reissuance, the total nitrogen (calendar year) has had an average of 3.83 mg/L and a 90% maximum of 4.37 mg/L.

During the 2006 issuance, a DO model was conducted for Rush River and staff determined a TKN limit of 5.0 mg/L would be protective of water quality. Staff reevaluated this model for the 2016 permit reissuance and determined that a TKN limit of 5.0 mg/L is still protective of dissolved oxygen and ammonia water quality criterion.

It is staff's best professional judgment that the TKN limit of a monthly average of 5.0 mg/L be carried forward with this permit reissuance. A TKN limit of 5.0 mg/L assumes that the majority of unoxidized nitrogen is in the form of refractory organic compounds that will not easily be oxidized. With a TKN limit of 5.0 mg/L combined with the denitrification requirements in place to protect the Chesapeake Bay, staff determined that there was no need for a specific ammonia limit.

2) Total Residual Chlorine:

The facility utilizes UV disinfection; therefore, chlorine limits are not applicable and were not included in this reissuance.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to carbonaceous biochemical oxygen demand-5 day ($CBOD_5$), total suspended solids (TSS), Total Kjeldahl Nitrogen (TKN), or pH limitations are proposed.

Dissolved Oxygen, $CBOD_5$, and TKN limitations are based on the stream modeling reevaluated in January 2016 (Attachment 10) and are set to ensure that the receiving stream D.O. does not decrease more than 0.2 mg/l to meet the requirements of the antidegradation policy.

It is staff's practice to equate the Total Suspended Solids limits with the $CBOD_5$ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries.

Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology.

The basis for the concentration limits is 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of ≥0.04 MGD to treat for TN and TP to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

This facility has also obtained coverage under 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN020108. Total Nitrogen Annual Loads and Total Phosphorus Annual Loads from this facility are found in 9VAC25-720 – *Water Quality Management Plan Regulation* which sets forth TN and TP maximum wasteload allocations.

Monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9VAC25-820.

Annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen and Total Phosphorus are included in this individual permit. The annual averages are based on the technology installed as part of the WQIF grant funding, 5.0 mg/L annual average Total Nitrogen and 0.8 mg/L annual average Total Phosphorus.

f. Effluent Limitations and Monitoring Summary:

The effluent limitations are presented in the following table. Limits were established for $CBOD_5$, Total Suspended Solids, TKN, pH, Dissolved Oxygen, E. *coli*, Total Nitrogen and Total Phosphorus.

The limit for Total Suspended Solids is based on Best Professional Judgment.

Effluent monitoring is required for Flow and Nitrate + Nitrite.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency from the last permit reissuance are being carried forward with this reissuance.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for $CBOD_5$ and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements: Outfall 001

Design flow is 0.06 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
$cBOD_5$	3,4	12 mg/L 2.7 kg/day	18 mg/L 4.1 kg/day	NA	NA	1/W	4H-C
Total Suspended Solids (TSS)	2	12 mg/L 2.7 kg/day	18 mg/L 4.1 kg/day	NA	NA	1/W	4H-C
Dissolved Oxygen (DO)	3	NA	NA	6.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	3,4	5.0 mg/L 1.1 kg/day	7.5 mg/L 1.7 kg/day	NA	NA	1/W	4H-C
E. coli (Geometric Mean) [c.]	3	126 n/100mL	NA	NA	NA	1/W	Grab
Nitrate+Nitrite, as N	3, 5	NL mg/L	NA	NA	NA	1/2W	4H-C
Total Nitrogen [a.]	3, 5	NL mg/L	NA	NA	NA	1/2W	Calculated
Total Nitrogen – Year to Date [b.]	3, 5	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year [b.]	3, 5	5.0 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	3	NL mg/L	NA	NA	NA	1/2W	4H-C
Total Phosphorus – Year to Date [b.]	3, 5	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year [b.]	3, 5	0.8 mg/L	NA	NA	NA	1/YR	Calculated

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. Stream Model - Attachment #10
5. 9VAC25-40 (Nutrient Regulation)

MGD = Million gallons per day.
TIRE = Totalizing, indicating and recording equipment.
S.U. = Standard units.
NA = Not applicable.
NL = No limit; monitor and report.

1/D = Once every day.
1/M = Once every month.
1/W = Once every week.
1/2W = Once every two weeks.
1/YR = Once every calendar year.

4H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 4-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of four (4) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum four (4) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15 minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20 for more information on the Nutrient Calculations.

c. Between 10:00 a.m. and 4:00 p.m.

20. Other Permit Requirements:

Part I.B. of the permit quantification levels and compliance reporting instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

21. Other Special Conditions:

a. **95% Capacity Reopener.** The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.

b. **Indirect Dischargers.** Required by VPDES Permit Regulation, 9VAC25-31-200 B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c. **O&M Manual Requirement.** Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d. **CTC, CTO Requirement.** The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

e. **Licensed Operator Requirement.** The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.

f. **Reliability Class.** The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of I.

g. **Water Quality Criteria Reopener.** The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

h. **Sludge Reopener.** The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

i. **Sludge Use and Disposal.** The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720, and 40 CFR

Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

j. **Nutrient Offsets**. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.

k. **E3/E4.** 9VAC25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

l. **Nutrient Reopener.** 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

m. **TMDL Reopener.** This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:

The In-stream Monitoring Special Condition was removed with this reissuance. In-stream monitoring took place annually in August and September in order to determine the water quality of the stream during its most critical condition. Results from in-stream monitoring during the last permit cycle were reviewed during the permit's reissuance. The only occurrence of ammonia at a detectable level was taken upstream in August 2011. Ammonia above the quantification level of 0.10 mg/L had not been detected downstream of the discharge. In-stream monitoring has shown that the facility's discharge does not appear to be negatively impacting the Rush River.

Staff reviewed the Water Quality Standards in order to determine what an acceptable level of ammonia would be for Rush River. Determining water quality standards for ammonia in freshwater where early life stages of fish are present requires the pH and temperature of the stream (9VAC25-260-155). In order to be conservative, the most limiting values of pH and temperature were used. In this instance, the most limiting values were the maximum pH and maximum temperature recorded from the in-stream monitoring during the last permit cycle. With a pH of 8.14 S.U. and a temperature of 27.4 °C, water quality standards dictate that the most limiting ammonia criteria is 0.879 mg/L.

There have been no changes to effluent's limits with this reissuance. The TKN limit of 5.0 mg/L remains protective of the stream's water quality standard for chronic and acute ammonia and in-stream monitoring is no longer needed.

b. Monitoring and Effluent Limitations:

None

None

25. Public Notice Information:

First Public Notice Date: March 23, 2016 Second Public Notice Date: March 30, 2016

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3859, caitlin.shipman@deq.virginia.gov. See Attachment 11 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

Previous Board Action(s):

None.

Staff Comments:

The location of Outfall 001reported in the permit application differed from what the DEQ had used during the previous permit cycles. During the site inspection, DEQ staff visited the outfall and determined that the correct location was what the DEQ had been using.

Public Comment:

No comments were received during the public notice.

State/Federal Agency Comments:

Virginia's Department of Health (VDH) had no objections and recommended a Reliability Class II for the facility. A Reliability Class I was required with the permit issuance and will be carried forward with this reissuance.

Comments from Virginia's Department of Conservation and Recreation (DCR) were received during this reissuance (Attachment 12). DCR supports the use of UV disinfection, which is currently used at this facility. It is staff's best professional judgment that the limits proposed in this permit will remain protective of the natural heritage resources associated with this site.

Fact Sheet Attachments

Attachment 1 – Flow Frequency Determination

Attachment 2 – Facility Diagram

Attachment 3 – Topographic Map

Attachment 4 – Site Inspection

Attachment 5 – Planning Statement

Attachment 6 – Waste Load Allocations (MISTRANTI spreadsheet)

Attachment 7 – In-Stream Monitoring

Attachment 8 – Specific Data from Discharge Monitoring Reports

Attachment 9 – Ammonia Criteria Calculations (STAT output)

Attachment 10 – Stream Modeling of Dissolved Oxygen

Attachment 11 – Public Notice

Attachment 12 – Comment Received from DCR

Attachment 1 – Flow Frequency Determination

Rush River Flow Frequency Determination
Rush River WWTP – VA0091651

The 2006 gaging station statistics were reviewed on January 14, 2016, for the Rush River gaging station and found to be identical to the values used for the 2006 permit issuance; therefore, no changes were necessary to the flow frequencies used for the calculation of the wasteload allocations.

Rush River at Washington, VA (#01662500):

Drainage Area = 14.7 mi^2

Low flow		High flow	
1Q10 = 0.0 cfs	0.0 mgd	1Q10 = 1.2 cfs	0.775 mgd
7Q10 = 0.0 cfs	0.0 mgd	7Q10 = 1.5 cfs	0.969 mgd
30Q5 = 0.21 cfs	0.13 mgd	30Q10 = 2.7 cfs	1.74 mgd
30Q10 = 0.09 cfs	0.058 mgd	HM = undefined	undefined

Rush River at discharge point:(at same location as gauging station)

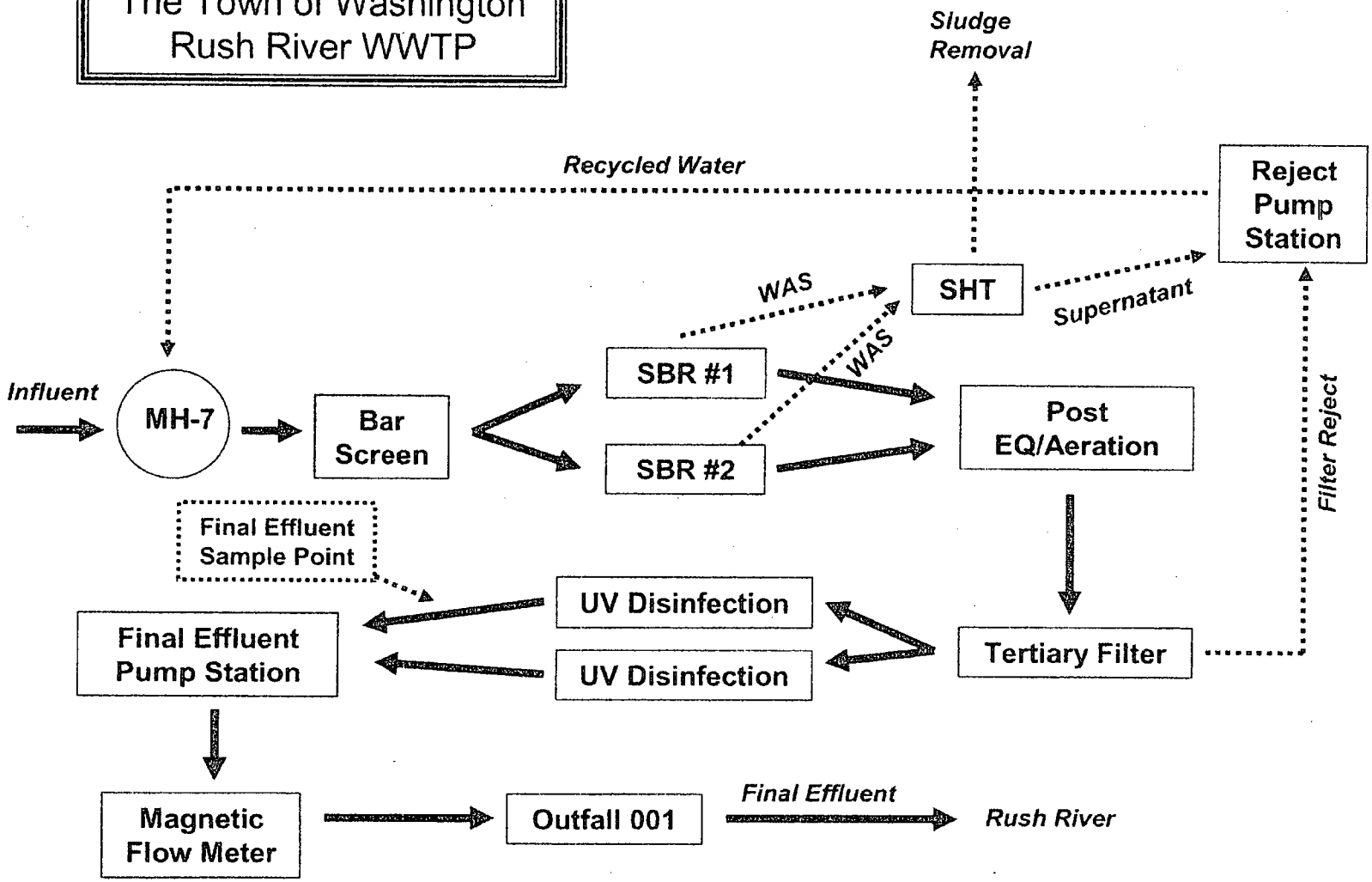
Drainage Area = 14.7 mi^2

Low flow		High flow	
1Q10 = 0.0 cfs	0.0 mgd	1Q10 = 1.2 cfs	0.775 mgd
7Q10 = 0.0 cfs	0.0 mgd	7Q10 = 1.5 cfs	0.969 mgd
30Q5 = 0.21 cfs	0.13 mgd	30Q10 = 2.7 cfs	1.74 mgd
30Q10 = 0.09 cfs	0.058 mgd		

High flow months are December to May.
Gauging station data is from 1953 to 1977.

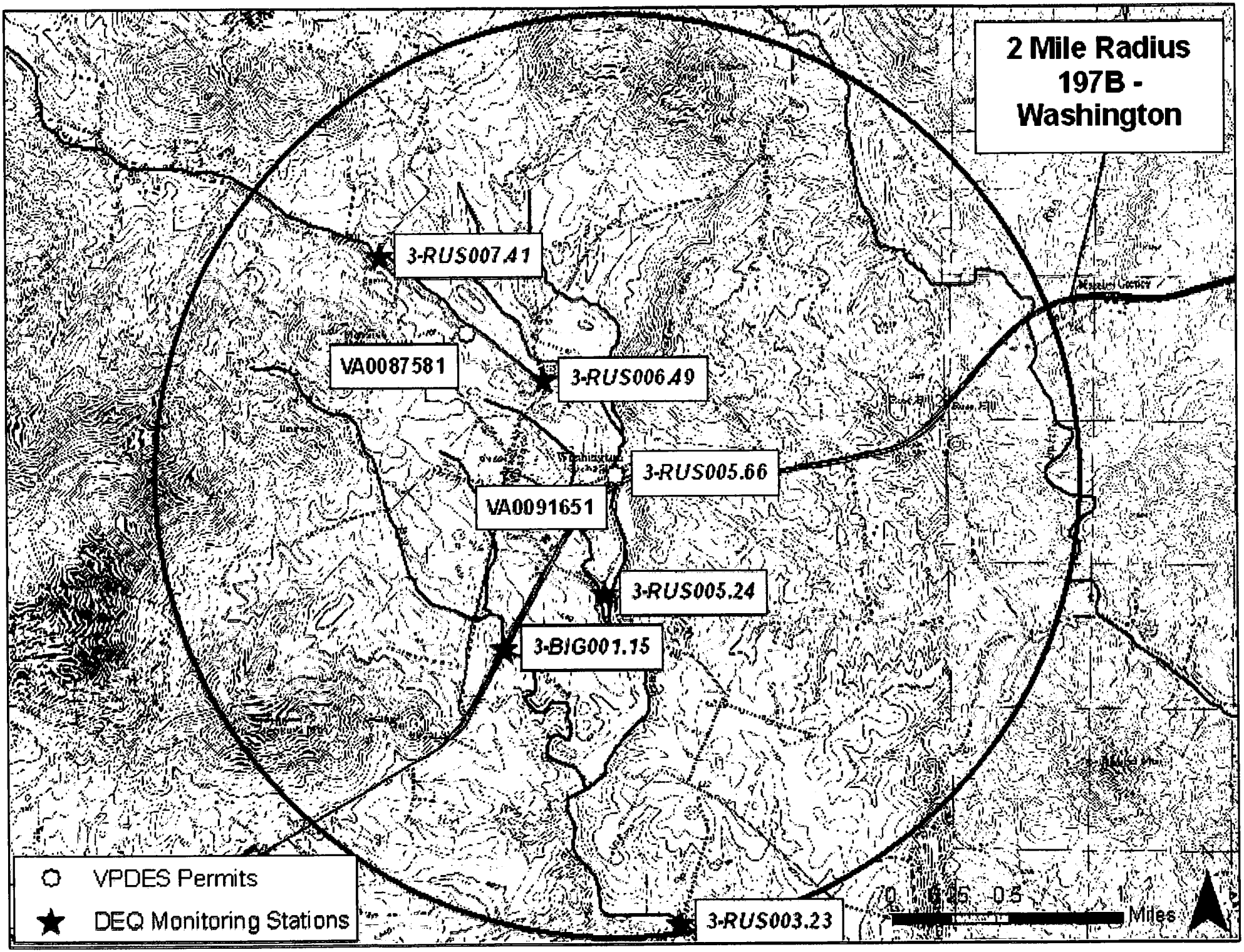
Attachment 2 – Facility Diagram

Flow/Process Diagram of The Town of Washington Rush River WWTP



tachment 2

Attachment 3 – Topographic Map


2 Mile Radius
197B -
Washington
3-RUS007.41
VA0087581
3-RUS006.49
3-RUS005.66
VA0091651
3-RUS005.24
3-BIG001.15
3-RUS003.23
VPDES Permits
DEQ Monitoring Stations
0
0.5
1
Miles

Attachment 4 – Site Inspection

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN VIRGINIA REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha

January 28, 2016

John Sullivan
Mayor
Rush River WWTP
485 Gay Street
Washington, VA 22747

Re: **Rush River - Wastewater Treatment Plant (WWTP), Permit # VA0091651**

Dear Mr. Sullivan,

Attached is a copy of the Site Inspection Report generated from the Facility Recon Inspection conducted at the Rush River - Wastewater Treatment Plant (WWTP) on January 13, 2016. This letter is not intended as a case decision under the Virginia Administrative Process Act, Va. Code § 2.2-4000 *et seq.*

Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact Lisa Janovsky at the Northern Regional Office at (703) 583-3801 or by E-mail at lisa.janovsky@deq.virginia.gov.

Sincerely,

Lisa Janovsky
Environmental Specialist II
Water Compliance Inspector
cc: Permits / DMR File

Virginia Department of Environmental Quality

RECON INSPECTION REPORT

FACILITY NAME: Rush River WWTP		**INSPECTION DATE:** January 13, 2016	
		INSPECTOR: Lisa Janovsky	
PERMIT No.: VA0091651		**REPORT DATE:** January 28, 2016	
TYPE OF FACILITY: ☑ Municipal ☐ Major ☐ Industrial ☑ Minor ☐ Federal ☐ Small Minor ☐ HP ☐ LP		**TIME OF INSPECTION:**	Arrival 9:45am / Departure 10:45am
		TOTAL TIME SPENT (including prep & travel)	8 hours
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?** ☐ Yes ☑ No	
REVIEWED BY / Date: Elmer L. Stalf 1/28/16			
PRESET DURING INSPECTION: Caitlin Shipman, Allison Thompson – DEQ; Troy Jenkins, Jr. - ESS			

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

9

- DEQ met Troy Jenkins, Jr. from ESS onsite for an inspection. The purpose of the site visit was to inspect the facility prior to reissuance of the permit.
- Wastewater enters the facility and is screened prior to entering one of the two Sequencing Batch Reactors (SBR's) for biological removal (Photos 2 & 3). The SBR's had a large amount of foam, which may be attributed to the colder temperatures.
- ESS staff has put insulation around the newly installed influent PVC "T" and contained it with trash bags and duct tape in order to prevent the pipes from freezing (photo 5). When one of the SBR units is in decant mode, the flows are directed to the other SBR unit. A nutrient supplement is occasionally added to the SBR units as well. The plant utilizes Poly-Aluminum Chloride (PAC) rather than Alum (which they used in the past) as a coagulant.
- Once the water leaves the SBR's, it goes to an equalization basin, where it is aerated and pumped to a tertiary filter. This is an up-flow filter where reject water is pumped to the head of the plant.
- The effluent then goes to the Ultraviolet Disinfection and effluent pump station where it is pumped to Outfall 001 (photo 7). The UV intensity meters were on and working correctly. The bulbs are changed approximately every 18,000 hours.
- Sludge is wasted from the SBR's to the sludge holding tank. This tank is pumped three times per month by a septage hauler and brought to the Remington Sewage Treatment Plant.
- DEQ viewed the outfall location, which was not discharging at the time of the inspection. The outfall and receiving stream appeared to be in good condition (photos 8-10). There was no evidence of algae growth near the outfall.
- DEQ checked the laboratory documentation. The log books were up to date and staff had all of the Initial Demonstration of Capability forms and NIST certification available. Additionally, the laboratory equipment was in good condition. No problems observed.

EFFLUENT FIELD DATA:

Flow _____ MGD	**Dissolved Oxygen** _____ mg/L	**TRC (Contact Tank)** _____ mg/L
pH _____ S.U.	**Temperature** _____ °C	**TRC (Final Effluent)** _____ mg/L
Was a Sampling Inspection conducted? ☐ Yes (see Sampling Inspection Report) ☑ No		

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☑ Shore based ☐ Submerged Diffuser? ☐ Yes ☑ No
2. Are the outfall and supporting structures in good condition? ☑ Yes ☐ No
3. Final Effluent (evidence of following problems): ☐ Sludge bar ☐ Grease
   ☐ Turbid effluent ☐ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☐ No
5. Receiving stream: ☑ No observed problems ☐ Indication of problems (explain below)

Comments: **Outfall was not discharging, but structure appeared to be in good condition. Final effluent was observed out of the final pump tank, which appeared clear and odorless.**

REQUEST for CORRECTIVE ACTION:

1. **None**

NOTES and COMMENTS:

- **DEQ recommends implementing foam control measures for the colder temperatures.**

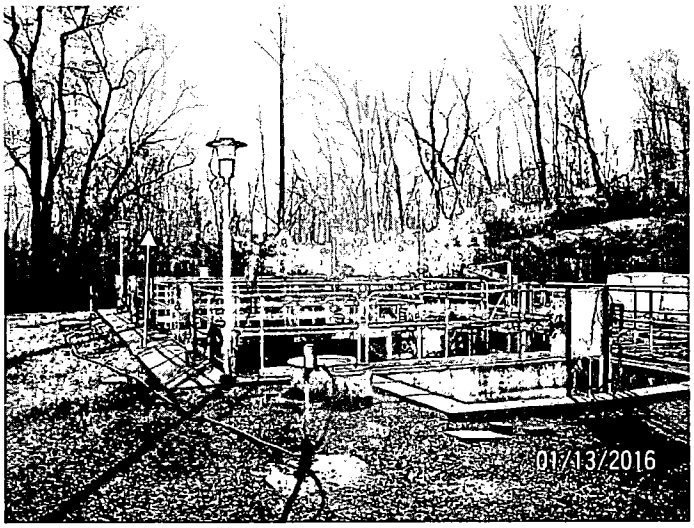


Photo 1: Overview of plant

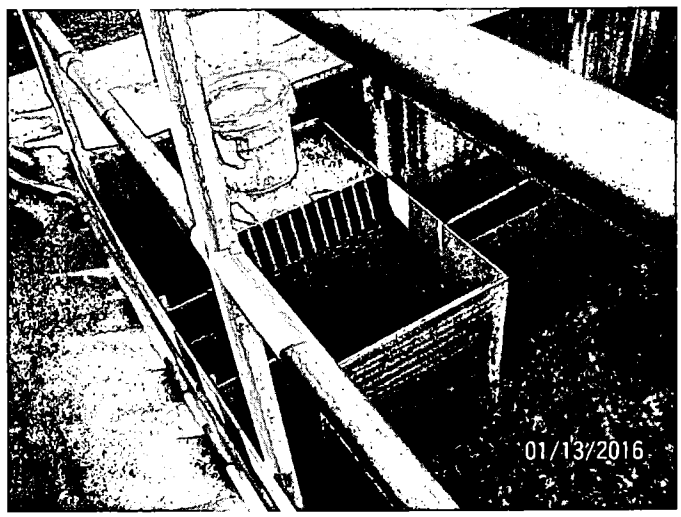


Photo 2: Headworks – Manual Bar Screen

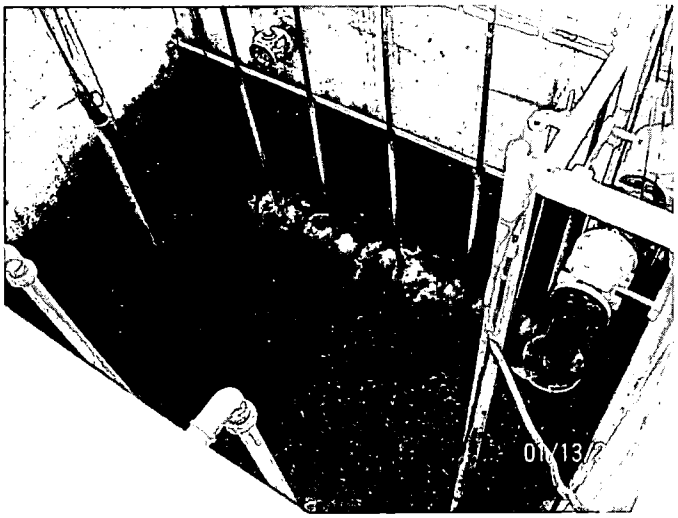


Photo 3: EQ Basin

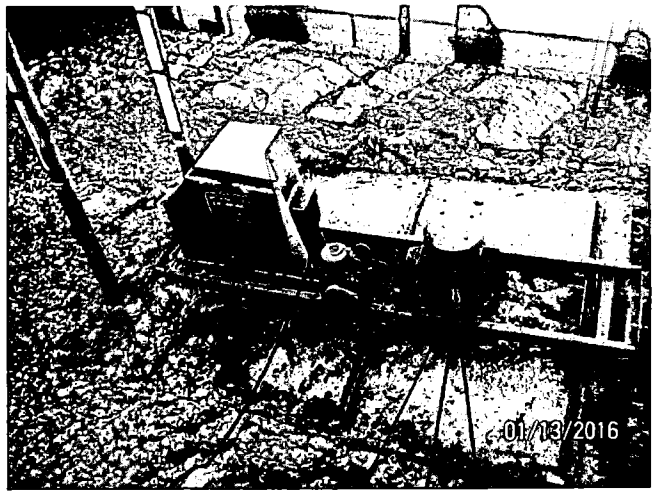


Photo 4: Sequencing Batch Reactor

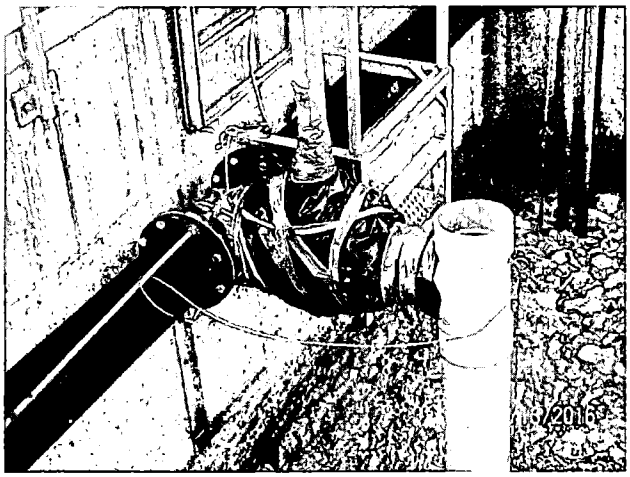


Photo 5: Bags/tape for heat parameter

Photo 6:

Taken: January 13, 2016

Photos and Layout by: Lisa Janovsky

Rush River WWTP

Permit # VA0091651

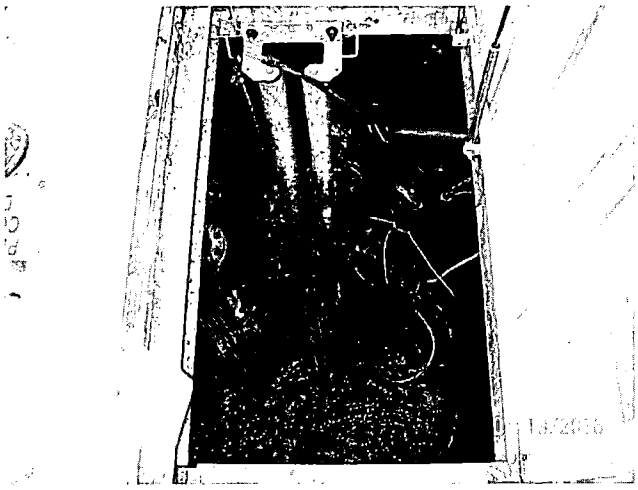


Photo 7: Final effluent pump station	**Photo 8: Outfall 001 – no discharge occurring**
	
Photo 9: Downstream of outfall	**Photo 10: Upstream of Outfall 001**
Taken: January 13, 2016	**Rush River WWTP**
Photos & Layout by: Lisa Janovsky	**Permit # VA0091651**

Attachment 5 – Planning Statement

To:	Caitlin Shipman
From:	Rebecca Shoemaker
Date:	04/26/2016
Subject:	Planning Statement for Rush River Wastewater Treatment Plant
Permit Number:	VA0091651

Information for Outfall 001:

Discharge Type:	Municipal , minor
Discharge Flow:	Average Daily Flow Rate: 0.017 MGD Maximum Daily Flow Rate: 0.038 MGD
Receiving Stream:	Rush River
Latitude / Longitude:	38° 42' 47.4" / 78° 09' 4.1"
Rivermile:	5.65 (determined relative to US station)
Streamcode:	3-RUS
Waterbody:	VAN-E05R; RA12
Water Quality Standards:	Class III, Section 4, no special standards
Drainage Area:	14.7 sq mile

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   This facility discharges to Rush River. DEQ ambient monitoring station 3-RUS005.66 is located at Route 683, approximately 0.01 mile upstream from this facility. The following is the water quality summary for this segment of the Rush River, as taken from the Draft 2014 Integrated Report:

   Class III, Section 4.

   DEQ monitoring stations located in this segment of Rush River:
   - *ambient monitoring station 3-RUS005.24, at Route 626*
   - *biological monitoring station 3-RUS005.66, at Route 683*
   - *biological monitoring station 3-RUS006.49, at Route 628*
   - *ambient and biological monitoring station 3RUS007.41, at Route 624*

   DEQ E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This segment is included in the Bacteria Total Maximum Daily Load Development for the Rappahannock River Basin, approved by EPA on 01/23/2008. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

Yes.

Table A. 303(d) Impairment and TMDL information for the receiving stream segment

Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the DRAFT 2014 Integrated Report						
Rush River	Recreation	*E. coli*	Rappahannock River Basin Bacteria TMDL 01/23/2008	1.04E+11 cfu/year *E. coli*	126 cfu/100 ml *E. coli* --- 0.06 MGD	---

3. Are there any 303(d) listed impairments within 15 miles downstream that are relevant to this discharge? If yes, please fill out Table B.

No.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

The tidal Rappahannock River, which is located approximately 70 miles downstream of this facility, is listed with a PCB impairment. In support for the PCB TMDL that is scheduled for development by 2016 for the tidal Rappahannock River, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal discharger. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility located approximately 70 miles upstream from the PCB impairment. Based on this information, this facility will not be requested to monitor for low-level PCBs.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within five miles of this discharge.

Attachment 6 – Waste Load Allocations (MISTRANTI spreadsheet)

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Rush River WWTP Permit No.: VA0091651

Receiving Stream: Rush River Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	50 mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	25 deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	28.5 deg C
90% Temperature (Wet season) =	15 deg C	30Q10 (Annual) =	0.058 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	23.9 deg C
90% Maximum pH =	7.9 SU	1Q10 (Wet season) =	0.775 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.88 SU
10% Maximum pH =	6.6 SU	30Q10 (Wet season)	1.74 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	7.47 SU
Tier Designation (1 or 2) =	2	30Q5 =	0.13 MGD			Discharge Flow =	0.06 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	3.1E+03	--	--	na	9.9E+01	--	--	na	3.1E+02	--	--	na	**3.1E+02**
Acrolein	0	--	--	na	9.3E+00	--	--	na	2.9E+01	--	--	na	9.3E-01	--	--	na	2.9E+00	--	--	na	**2.9E+00**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	na	2.5E-01	--	--	na	2.5E-01	--	--	na	**2.5E-01**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	7.5E-01	--	na	5.0E-05	7.5E-01	--	na	5.0E-05	**7.5E-01**	--	na	**5.0E-05**
Ammonia-N (mg/l) (Yearly)	0	1.05E+01	1.29E+00	na	--	1.05E+01	2.53E+00	na	--	2.63E+00	3.22E-01	na	--	2.63E+00	6.33E-01	na	--	**2.63E+00**	**6.33E-01**	na	--
Ammonia-N (mg/l) (High Flow)	0	1.02E+01	2.66E+00	na	--	1.41E+02	7.99E+01	na	--	2.54E+00	6.66E-01	na	--	3.53E+01	2.00E+01	na	--	**3.53E+01**	**2.00E+01**	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	1.3E+05	--	--	na	4.0E+03	--	--	na	1.3E+04	--	--	na	**1.3E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	2.0E+03	--	--	na	6.4E+01	--	--	na	2.0E+02	--	--	na	**2.0E+02**
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	8.5E+01	3.8E+01	na	--	8.5E+01	3.8E+01	na	--	**8.5E+01**	**3.8E+01**	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	na	5.1E+01	--	--	na	5.1E+01	--	--	na	**5.1E+01**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	na	2.0E-04	--	--	na	2.0E-04	--	--	na	**2.0E-04**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	**1.8E-02**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	**1.8E-02**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	**1.8E-02**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	**1.8E-02**
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	na	5.3E-01	--	--	na	5.3E-01	--	--	na	**5.3E-01**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	2.1E+05	--	--	na	6.5E+03	--	--	na	2.1E+04	--	--	na	**2.1E+04**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	na	2.2E+00	--	--	na	2.2E+00	--	--	na	**2.2E+00**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	**1.4E+02**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	6.0E+03	--	--	na	1.9E+02	--	--	na	6.0E+02	--	--	na	**6.0E+02**
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	4.5E-01	1.6E-01	na	--	4.5E-01	1.6E-01	na	--	**4.5E-01**	**1.6E-01**	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	na	1.6E+00	--	--	na	1.6E+00	--	--	na	**1.6E+00**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	6.0E-01	1.1E-03	na	8.1E-04	6.0E-01	1.1E-03	na	8.1E-04	**6.0E-01**	**1.1E-03**	na	**8.1E-04**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	2.2E+05	5.8E+04	na	--	2.2E+05	5.8E+04	na	--	**2.2E+05**	**5.8E+04**	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	4.8E+00	2.8E+00	na	--	4.8E+00	2.8E+00	na	--	**4.8E+00**	**2.8E+00**	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	5.1E+03	--	--	na	1.6E+02	--	--	na	5.1E+02	--	--	na	**5.1E+02**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	na	1.3E+01	--	--	na	1.3E+01	--	--	na	**1.3E+01**
Chloroform	0	--	--	na	1.1E+04	--	--	na	3.5E+04	--	--	na	1.1E+03	--	--	na	3.5E+03	--	--	na	**3.5E+03**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	5.1E+03	--	--	na	1.6E+02	--	--	na	5.1E+02	--	--	na	**5.1E+02**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	4.8E+02	--	--	na	1.5E+01	--	--	na	4.8E+01	--	--	na	**4.8E+01**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	2.1E-02	1.0E-02	na	--	2.1E-02	1.0E-02	na	--	**2.1E-02**	**1.0E-02**	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	8.1E+01	1.1E+01	na	--	8.1E+01	1.1E+01	na	--	**8.1E+01**	**1.1E+01**	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	4.0E+00	2.8E+00	na	--	4.0E+00	2.8E+00	na	--	**4.0E+00**	**2.8E+00**	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	3.2E+01	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	1.8E-03	--	--	na	1.8E-03	--	--	na	**1.8E-03**
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	1.7E+00	1.2E+00	na	--	1.7E+00	1.2E+00	na	--	**1.7E+00**	**1.2E+00**	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	5.1E+04	5.5E+00	1.3E+00	na	1.6E+03	5.5E+00	1.3E+00	na	5.1E+03	**5.5E+00**	**1.3E+00**	na	**5.1E+03**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	na	3.1E-04	--	--	na	3.1E-04	--	--	na	**3.1E-04**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	na	2.2E-04	--	--	na	2.2E-04	--	--	na	**2.2E-04**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	2.8E-01	2.5E-04	na	2.2E-04	2.8E-01	2.5E-04	na	2.2E-04	**2.8E-01**	**2.5E-04**	na	**2.2E-04**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	2.5E-02	na	--	--	2.5E-02	na	--	--	**2.5E-02**	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	4.3E-02	4.3E-02	na	--	4.3E-02	4.3E-02	na	--	**4.3E-02**	**4.3E-02**	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	**1.8E-02**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	4.1E+03	--	--	na	1.3E+02	--	--	na	4.1E+02	--	--	na	**4.1E+02**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	3.0E+03	--	--	na	9.6E+01	--	--	na	3.0E+02	--	--	na	**3.0E+02**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	6.0E+02	--	--	na	1.9E+01	--	--	na	6.0E+01	--	--	na	**6.0E+01**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	na	2.8E-02	--	--	na	2.8E-02	--	--	na	**2.8E-02**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	na	1.7E+01	--	--	na	1.7E+01	--	--	na	**1.7E+01**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	na	3.7E+01	--	--	na	3.7E+01	--	--	na	**3.7E+01**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	2.2E+04	--	--	na	7.1E+02	--	--	na	2.2E+03	--	--	na	**2.2E+03**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	3.2E+04	--	--	na	1.0E+03	--	--	na	3.2E+03	--	--	na	**3.2E+03**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	9.2E+02	--	--	na	2.9E+01	--	--	na	9.2E+01	--	--	na	**9.2E+01**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	na	**1.5E+01**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	na	2.1E+01	--	--	na	2.1E+01	--	--	na	**2.1E+01**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	6.0E-02	1.4E-02	na	5.4E-05	6.0E-02	1.4E-02	na	5.4E-05	**6.0E-02**	**1.4E-02**	na	**5.4E-05**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	1.4E+05	--	--	na	4.4E+03	--	--	na	1.4E+04	--	--	na	**1.4E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	2.7E+03	--	--	na	8.5E+01	--	--	na	2.7E+02	--	--	na	**2.7E+02**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	3.5E+06	--	--	na	1.1E+05	--	--	na	3.5E+05	--	--	na	**3.5E+05**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	1.4E+04	--	--	na	4.5E+02	--	--	na	1.4E+03	--	--	na	**1.4E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.7E+04	--	--	na	5.3E+02	--	--	na	1.7E+03	--	--	na	**1.7E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	8.9E+02	--	--	na	2.8E+01	--	--	na	8.9E+01	--	--	na	**8.9E+01**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	na	3.4E+00	--	--	na	3.4E+00	--	--	na	**3.4E+00**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.6E-07	--	--	na	5.1E-09	--	--	na	1.6E-08	--	--	na	**1.6E-08**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	na	2.0E-01	--	--	na	2.0E-01	--	--	na	**2.0E-01**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	2.8E+02	5.5E-02	1.4E-02	na	8.9E+00	5.5E-02	1.4E-02	na	2.8E+01	**5.5E-02**	**1.4E-02**	na	**2.8E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	2.8E+02	5.5E-02	1.4E-02	na	8.9E+00	5.5E-02	1.4E-02	na	2.8E+01	**5.5E-02**	**1.4E-02**	na	**2.8E+01**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	5.5E-02	1.4E-02	--	--	5.5E-02	1.4E-02	--	--	**5.5E-02**	**1.4E-02**	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	2.8E+02	--	--	na	8.9E+00	--	--	na	2.8E+01	--	--	na	**2.8E+01**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	1.9E-01	2.2E-02	9.0E-03	na	6.0E-03	2.2E-02	9.0E-03	na	1.9E-02	**2.2E-02**	**9.0E-03**	na	**1.9E-02**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	9.5E-01	--	--	na	3.0E-02	--	--	na	9.5E-02	--	--	na	**9.5E-02**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	6.7E+03	--	--	na	2.1E+02	--	--	na	6.7E+02	--	--	na	**6.7E+02**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	4.4E+02	--	--	na	1.4E+01	--	--	na	4.4E+01	--	--	na	**4.4E+01**
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.7E+04	--	--	na	5.3E+02	--	--	na	1.7E+03	--	--	na	**1.7E+03**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	2.5E-03	na	--	--	2.5E-03	na	--	--	**2.5E-03**	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	1.3E-01	9.5E-04	na	7.9E-05	1.3E-01	9.5E-04	na	7.9E-05	**1.3E-01**	**9.5E-04**	na	**7.9E-05**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	1.3E-01	9.5E-04	na	3.9E-05	1.3E-01	9.5E-04	na	3.9E-05	**1.3E-01**	**9.5E-04**	na	**3.9E-05**
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-04	--	--	na	2.9E-04	--	--	na	**2.9E-04**
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+01	--	--	na	1.8E+01	--	--	na	**1.8E+01**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-03	--	--	na	4.9E-03	--	--	na	**4.9E-03**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-02	--	--	na	1.7E-02	--	--	na	**1.7E-02**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	2.4E-01	--	na	1.8E-01	2.4E-01	--	na	1.8E-01	**2.4E-01**	--	na	**1.8E-01**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	3.5E+03	--	--	na	1.1E+02	--	--	na	3.5E+02	--	--	na	**3.5E+02**
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+00	--	--	na	3.3E+00	--	--	na	**3.3E+00**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	5.0E-01	na	--	--	5.0E-01	na	--	--	**5.0E-01**	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	**1.8E-02**
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	na	**9.6E+02**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	1.2E+01	1.4E+00	na	--	1.2E+01	1.4E+00	na	--	**1.2E+01**	**1.4E+00**	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	2.5E-02	na	--	--	2.5E-02	na	--	--	**2.5E-02**	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	3.5E-01	1.9E-01	--	--	3.5E-01	1.9E-01	--	--	**3.5E-01**	**1.9E-01**	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	4.8E+03	--	--	na	1.5E+02	--	--	na	4.8E+02	--	--	na	**4.8E+02**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+02	--	--	na	5.9E+02	--	--	na	**5.9E+02**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	7.5E-03	na	--	--	7.5E-03	na	--	--	**7.5E-03**	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	1.5E+04	2.5E+01	2.8E+00	na	4.6E+02	2.5E+01	2.8E+00	na	1.5E+03	**2.5E+01**	**2.8E+00**	na	**1.5E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	2.2E+03	--	--	na	6.9E+01	--	--	na	2.2E+02	--	--	na	**2.2E+02**
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+00	--	--	na	3.0E+00	--	--	na	**3.0E+00**
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+00	--	--	na	6.0E+00	--	--	na	**6.0E+00**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E-01	--	--	na	5.1E-01	--	--	na	**5.1E-01**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	7.0E+00	1.7E+00	--	--	7.0E+00	1.7E+00	--	--	**7.0E+00**	**1.7E+00**	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	1.6E-02	3.3E-03	na	--	1.6E-02	3.3E-03	na	--	**1.6E-02**	**3.3E-03**	na	--
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	3.5E-03	na	6.4E-05	--	3.5E-03	na	6.4E-05	--	**3.5E-03**	na	**6.4E-05**
Pentachlorophenol [C]	0	1.4E+01	1.1E+01	na	3.0E+01	1.4E+01	1.1E+01	na	3.0E+01	3.5E+00	2.7E+00	na	3.0E+00	3.5E+00	2.7E+00	na	3.0E+00	**3.5E+00**	**2.7E+00**	na	**3.0E+00**
Phenol	0	--	--	na	8.6E+05	--	--	na	2.7E+06	--	--	na	8.6E+04	--	--	na	2.7E+05	--	--	na	**2.7E+05**
Pyrene	0	--	--	na	4.0E+03	--	--	na	1.3E+04	--	--	na	4.0E+02	--	--	na	1.3E+03	--	--	na	**1.3E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	1.3E+04	5.0E+00	1.3E+00	na	4.2E+02	5.0E+00	1.3E+00	na	1.3E+03	**5.0E+00**	**1.3E+00**	**na**	**1.3E+03**
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	2.6E-01	--	na	--	2.6E-01	--	na	--	**2.6E-01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	na	4.0E+00	--	--	na	4.0E+00	**--**	**--**	**na**	**4.0E+00**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+00	--	--	na	3.3E+00	**--**	**--**	**na**	**3.3E+00**
Thallium	0	--	--	na	4.7E-01	--	--	na	1.5E+00	--	--	na	4.7E-02	--	--	na	1.5E-01	**--**	**--**	**na**	**1.5E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	1.9E+04	--	--	na	6.0E+02	--	--	na	1.9E+03	**--**	**--**	**na**	**1.9E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	1.8E-01	5.0E-05	na	2.8E-04	1.8E-01	5.0E-05	na	2.8E-04	**1.8E-01**	**5.0E-05**	**na**	**2.8E-04**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	1.2E-01	1.8E-02	na	--	1.2E-01	1.8E-02	na	--	**1.2E-01**	**1.8E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	2.2E+02	--	--	na	7.0E+00	--	--	na	2.2E+01	**--**	**--**	**na**	**2.2E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	na	1.6E+01	--	--	na	1.6E+01	**--**	**--**	**na**	**1.6E+01**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	na	3.0E+01	--	--	na	3.0E+01	**--**	**--**	**na**	**3.0E+01**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	na	2.4E+00	--	--	na	2.4E+00	**--**	**--**	**na**	**2.4E+00**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	na	2.4E+00	--	--	na	2.4E+00	**--**	**--**	**na**	**2.4E+00**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+01	6.6E+01	na	8.2E+04	1.6E+01	1.6E+01	na	2.6E+03	1.6E+01	1.6E+01	na	8.2E+03	**1.6E+01**	**1.6E+01**	**na**	**8.2E+03**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.0E+02
Arsenic	2.3E+01
Barium	na
Cadmium	9.9E-02
Chromium III	6.3E+00
Chromium VI	1.6E+00
Copper	7.0E-01
Iron	na
Lead	8.4E-01
Manganese	na
Mercury	1.2E-01
Nickel	1.7E+00
Selenium	7.5E-01
Silver	1.0E-01
Zinc	6.5E+00

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Attachment 7 – In-Stream Monitoring

Ambient Water Quality Data for Rush River

In-stream Monitoring Reports from August 2010- September 2015 were reviewed for the permit reissuance cycle. In-stream monitoring occurred in August and September in order to characterize the stream during its most critical condition.

	Upstream, 75'				Downstream, 75'			
	Parameter				Parameter			
Date	DO (mg/L)	pH	Temp. °C	Ammonia (mg/L)	DO (mg/L)	pH	Temp. °C	Ammonia (mg/L)
Sep-15	9.10	7.94	15.9	<0.10	9.30	7.77	15.9	<0.10
Aug-15	8.40	8.14	20.9	<0.10	8.40	7.95	20.9	<0.10
Sep-14	8.90	7.50	19.3	<0.10	8.80	7.43	19.2	<0.10
Aug-14	9.10	7.09	20.7	<0.10	9.40	6.96	20.7	<0.10
Sep-13	8.70	6.71	19.7	<0.10	8.60	6.77	20.1	<0.10
Aug-13	9.10	6.20	17.8	<0.10	9.20	6.47	17.7	<0.10
Sep-12	6.18	6.62	20.6	<0.1	7.61	6.73	21.3	<0.1
Aug-12	6.03	7.04	20.9	<0.10	6.90	7.46	21.8	<0.10
Sep-11	9.20	7.02	17.2	<0.1	9.28	6.95	17.3	<0.1
Aug-11	7.96	6.57	24.9	0.14	10.88	6.71	26.8	<0.1
Sep-10	7.55	7.08	23.6	<0.1	7.23	7.14	21.8	<0.1
Aug-10	8.90	7.14	27.4	<0.1	9.40	6.71	28.1	<0.1
Average:	8.26	7.09	20.7		8.75	7.09	20.97	
Maximum:	9.20	8.14	27.4		10.88	7.95	28.10	

90% maximum upstream pH: 7.9

10% maximum upstream pH: 6.6

90% temperature (annual): not enough information, assume 25 °C

90% temperature (wet season): not enough information, assume 15 °C

Attachment 8 – Specific Data from Discharge Monitoring Reports

Rush River Wastewater Treatment Plant
VA0091651

90% Maximum pH	7.88 SU
10% Maximum pH	7.468 S.U.
90% Maximum Temperature (annual)	28.5 °C
90% Maximum Temp (wet season)	23.9 °C

Date	pH (SU)	Temp (°C)	Wet Season	pH (SU)	Temp (°C)
1/1/2015	7.89	15.1	1/1/2015	7.89	15.1
1/2/2015	7.78	14.6	1/2/2015	7.78	14.6
1/3/2015	7.76	14.9	1/3/2015	7.76	14.9
1/4/2015	7.74	16.0	1/4/2015	7.74	16.0
1/5/2015	7.76	16.0	1/5/2015	7.76	16.0
1/6/2015	7.77	15.4	1/6/2015	7.77	15.4
1/7/2015	7.80	12.5	1/7/2015	7.80	12.5
1/8/2015	7.83	12.0	1/8/2015	7.83	12.0
1/9/2015	7.70	11.3	1/9/2015	7.70	11.3
1/10/2015	7.40	12.1	1/10/2015	7.40	12.1
1/11/2015	7.66	12.0	1/11/2015	7.66	12.0
1/12/2015	7.51	11.6	1/12/2015	7.51	11.6
1/13/2015	7.60	11.7	1/13/2015	7.60	11.7
1/14/2015	7.67	11.4	1/14/2015	7.67	11.4
1/15/2015	7.71	11.5	1/15/2015	7.71	11.5
1/16/2015	7.65	12.0	1/16/2015	7.65	12.0
1/17/2015	7.71	11.8	1/17/2015	7.71	11.8
1/18/2015	7.73	11.9	1/18/2015	7.73	11.9
1/19/2015	7.80	14.6	1/19/2015	7.80	14.6
1/20/2015	7.81	14.2	1/20/2015	7.81	14.2
1/21/2015	7.77	14.4	1/21/2015	7.77	14.4
1/22/2015	7.75	13.5	1/22/2015	7.75	13.5
1/23/2015	7.82	13.2	1/23/2015	7.82	13.2
1/24/2015	7.51	14.2	1/24/2015	7.51	14.2
1/25/2015	7.63	14.0	1/25/2015	7.63	14.0
1/26/2015	7.69	13.8	1/26/2015	7.69	13.8
1/27/2015	7.81	13.2	1/27/2015	7.81	13.2
1/28/2015	7.86	13.0	1/28/2015	7.86	13.0
1/29/2015	7.79	13.3	1/29/2015	7.79	13.3
1/30/2015	7.77	12.8	1/30/2015	7.77	12.8
1/31/2015	7.86	12.2	1/31/2015	7.86	12.2
2/1/2015	7.80	12.4	2/1/2015	7.80	12.4
2/2/2015	7.77	13.4	2/2/2015	7.77	13.4
2/3/2015	7.79	13.3	2/3/2015	7.79	13.3
2/4/2015	7.98	12.5	2/4/2015	7.98	12.5
2/5/2015	7.95	12.2	2/5/2015	7.95	12.2
2/6/2015	7.70	12.2	2/6/2015	7.70	12.2
2/7/2015	7.81	12.0	2/7/2015	7.81	12.0

Date	pH (SU)	Temp (°C)	Wet Season	pH (SU)	Temp (°C)
2/8/2015	7.79	12.6	2/8/2015	7.79	12.6
2/9/2015	7.91	14.2	2/9/2015	7.91	14.2
2/10/2015	7.83	13.4	2/10/2015	7.83	13.4
2/11/2015	7.60	13.1	2/11/2015	7.60	13.1
2/12/2015	7.63	12.9	2/12/2015	7.63	12.9
2/13/2015	7.68	12.3	2/13/2015	7.68	12.3
2/14/2015	7.60	12.3	2/14/2015	7.60	12.3
2/15/2015	7.61	10.5	2/15/2015	7.61	10.5
2/16/2015	7.40	10.1	2/16/2015	7.40	10.1
2/17/2015	7.66	10.5	2/17/2015	7.66	10.5
2/18/2015	7.59	10.3	2/18/2015	7.59	10.3
2/19/2015	7.61	8.9	2/19/2015	7.61	8.9
2/20/2015	7.55	8.5	2/20/2015	7.55	8.5
2/21/2015	7.57	8.2	2/21/2015	7.57	8.2
2/22/2015	7.82	11.0	2/22/2015	7.82	11.0
2/23/2015	7.77	10.9	2/23/2015	7.77	10.9
2/24/2015	7.75	11.0	2/24/2015	7.75	11.0
2/25/2015	7.51	9.5	2/25/2015	7.51	9.5
2/26/2015	7.50	10.8	2/26/2015	7.50	10.8
2/27/2015	7.82	11.5	2/27/2015	7.82	11.5
2/28/2015	7.59	10.9	2/28/2015	7.59	10.9
3/1/2015	7.59	11.0	3/1/2015	7.59	11.0
3/2/2015	7.73	13.1	3/2/2015	7.73	13.1
3/3/2015	7.55	11.6	3/3/2015	7.55	11.6
3/4/2015	7.58	11.8	3/4/2015	7.58	11.8
3/5/2015	7.45	12.0	3/5/2015	7.45	12.0
3/6/2015	7.61	11.2	3/6/2015	7.61	11.2
3/7/2015	7.61	11.1	3/7/2015	7.61	11.1
3/8/2015	7.64	12.2	3/8/2015	7.64	12.2
3/9/2015	7.60	14.9	3/9/2015	7.60	14.9
3/10/2015	7.65	13.5	3/10/2015	7.65	13.5
3/11/2015	7.74	14.4	3/11/2015	7.74	14.4
3/12/2015	7.53	14.3	3/12/2015	7.53	14.3
3/13/2015	7.49	14.2	3/13/2015	7.49	14.2
3/14/2015	7.25	15.0	3/14/2015	7.25	15.0
3/15/2015	7.81	15.9	3/15/2015	7.81	15.9
3/16/2015	7.83	17.3	3/16/2015	7.83	17.3
3/17/2015	7.79	17.2	3/17/2015	7.79	17.2
3/18/2015	7.75	15.0	3/18/2015	7.75	15.0
3/19/2015	7.78	15.2	3/19/2015	7.78	15.2
3/20/2015	7.62	16.0	3/20/2015	7.62	16.0
3/21/2015	7.36	16.0	3/21/2015	7.36	16.0
3/22/2015	7.54	16.2	3/22/2015	7.54	16.2
3/23/2015	7.83	15.7	3/23/2015	7.83	15.7
3/24/2015	7.88	15.4	3/24/2015	7.88	15.4

Date	pH (SU)	Temp (°C)	Wet Season	pH (SU)	Temp (°C)
3/25/2015	7.74	15.2	3/25/2015	7.74	15.2
3/26/2015	7.71	15.0	3/26/2015	7.71	15.0
3/27/2015	7.73	17.8	3/27/2015	7.73	17.8
3/28/2015	7.60	16.0	3/28/2015	7.60	16.0
3/29/2015	7.62	16.2	3/29/2015	7.62	16.2
3/30/2015	7.71	16.7	3/30/2015	7.71	16.7
3/31/2015	7.75	16.9	3/31/2015	7.75	16.9
4/1/2015	8.06	16.5	4/1/2015	8.06	16.5
4/2/2015	7.84	16.7	4/2/2015	7.84	16.7
4/3/2015	7.78	17.6	4/3/2015	7.78	17.6
4/4/2015	7.75	18.7	4/4/2015	7.75	18.7
4/5/2015	7.70	18.8	4/5/2015	7.70	18.8
4/6/2015	7.69	18.8	4/6/2015	7.69	18.8
4/7/2015	7.71	19.2	4/7/2015	7.71	19.2
4/8/2015	7.75	19.3	4/8/2015	7.75	19.3
4/9/2015	7.67	19.0	4/9/2015	7.67	19.0
4/10/2015	7.56	20.0	4/10/2015	7.56	20.0
4/11/2015	7.67	20.1	4/11/2015	7.67	20.1
4/12/2015	7.70	20.1	4/12/2015	7.70	20.1
4/13/2015	7.55	21.2	4/13/2015	7.55	21.2
4/14/2015	7.80	20.8	4/14/2015	7.80	20.8
4/15/2015	7.78	20.6	4/15/2015	7.78	20.6
4/16/2015	7.59	19.4	4/16/2015	7.59	19.4
4/17/2015	7.54	21.7	4/17/2015	7.54	21.7
4/18/2015	7.50	21.3	4/18/2015	7.50	21.3
4/19/2015	7.66	21.5	4/19/2015	7.66	21.5
4/20/2015	7.60	22.6	4/20/2015	7.60	22.6
4/21/2015	7.58	22.1	4/21/2015	7.58	22.1
4/22/2015	7.75	20.8	4/22/2015	7.75	20.8
4/23/2015	7.79	20.5	4/23/2015	7.79	20.5
4/24/2015	7.66	20.2	4/24/2015	7.66	20.2
4/25/2015	7.60	19.4	4/25/2015	7.60	19.4
4/26/2015	7.62	20.6	4/26/2015	7.62	20.6
4/27/2015	7.80	20.7	4/27/2015	7.80	20.7
4/28/2015	7.71	20.4	4/28/2015	7.71	20.4
4/29/2015	7.69	20.5	4/29/2015	7.69	20.5
4/30/2015	7.96	20.9	4/30/2015	7.96	20.9
5/1/2015	7.81	21.0	5/1/2015	7.81	21.0
5/2/2015	7.80	21.3	5/2/2015	7.80	21.3
5/3/2015	7.84	22.0	5/3/2015	7.84	22.0
5/4/2015	7.70	23.0	5/4/2015	7.70	23.0
5/5/2015	7.69	22.8	5/5/2015	7.69	22.8
5/6/2015	7.73	22.9	5/6/2015	7.73	22.9
5/7/2015	7.70	23.0	5/7/2015	7.70	23.0

Date	pH (SU)	Temp (°C)
5/8/2015	7.75	23.5
5/9/2015	7.68	23.5
5/10/2015	7.66	23.4
5/11/2015	7.90	25.4
5/12/2015	7.88	25.0
5/13/2015	7.96	24.1
5/14/2015	7.99	23.0
5/15/2015	7.84	24.1
5/16/2015	7.90	24.1
5/17/2015	7.87	23.9
5/18/2015	7.92	25.5
5/19/2015	7.88	26.2
5/20/2015	7.80	25.9
5/21/2015	7.79	24.1
5/22/2015	7.90	23.5
5/23/2015	7.83	23.6
5/24/2015	7.82	23.9
5/25/2015	7.72	24.8
5/26/2015	7.69	26.0
5/27/2015	7.76	25.9
5/28/2015	7.71	25.9
5/29/2015	7.56	26.1
5/30/2015	7.75	27.0
5/31/2015	7.76	27.4
6/1/2015	7.80	27.2
6/2/2015	7.96	27.2
6/3/2015	7.91	25.6
6/4/2015	7.93	25.2
6/5/2015	7.56	24.6
6/6/2015	7.69	24.9
6/7/2015	7.70	24.6
6/8/2015	7.49	26.2
6/9/2015	7.70	26.3
6/10/2015	7.69	26.6
6/11/2015	7.66	26.4
6/12/2015	7.70	27.4
6/13/2015	7.40	27.1
6/14/2015	7.53	27.4
6/15/2015	7.76	28.1
6/16/2015	7.71	28.0
6/17/2015	7.65	28.0
6/18/2015	7.68	27.8
6/19/2015	7.57	28.1
6/20/2015	7.61	27.6
6/21/2015	7.56	27.8

Wet Season	pH (SU)	Temp (°C)
5/8/2015	7.75	23.5
5/9/2015	7.68	23.5
5/10/2015	7.66	23.4
5/11/2015	7.90	25.4
5/12/2015	7.88	25.0
5/13/2015	7.96	24.1
5/14/2015	7.99	23.0
5/15/2015	7.84	24.1
5/16/2015	7.90	24.1
5/17/2015	7.87	23.9
5/18/2015	7.92	25.5
5/19/2015	7.88	26.2
5/20/2015	7.80	25.9
5/21/2015	7.79	24.1
5/22/2015	7.90	23.5
5/23/2015	7.83	23.6
5/24/2015	7.82	23.9
5/25/2015	7.72	24.8
5/26/2015	7.69	26.0
5/27/2015	7.76	25.9
5/28/2015	7.71	25.9
5/29/2015	7.56	26.1
5/30/2015	7.75	27.0
5/31/2015	7.76	27.4
12/1/2015	7.86	18.5
12/2/2015	7.77	18.5
12/3/2015	7.83	18.1
12/4/2015	7.32	17.9
12/5/2015	7.36	17.5
12/6/2015	7.57	17.8
12/7/2015	7.10	18.3
12/8/2015	7.74	18.6
12/9/2015	7.71	17.7
12/10/2015	7.66	17.7
12/11/2015	7.20	18.6
12/12/2015	7.51	18.6
12/13/2015	7.24	19.7
12/14/2015	7.47	20.5
12/15/2015	7.80	20.4
12/16/2015	7.72	20.0

Date	pH (SU)	Temp (°C)
6/22/2015	7.64	28.5
6/23/2015	7.73	28.5
6/24/2015	7.71	28.7
6/25/2015	7.76	27.8
6/26/2015	7.20	27.6
6/27/2015	7.52	27.0
6/28/2015	7.62	27.1
6/29/2015	7.90	27.3
6/30/2015	7.74	27.5
7/1/2015	7.73	27.7
7/2/2015	7.64	27.4
7/3/2015	7.61	27.3
7/4/2015	7.73	27.8
7/5/2015	7.71	27.9
7/6/2015	7.60	28.4
7/7/2015	7.61	28.4
7/8/2015	7.61	28.7
7/9/2015	7.57	29.0
7/10/2015	7.61	28.0
7/11/2015	7.60	28.0
7/12/2015	7.66	28.1
7/13/2015	7.88	27.2
7/14/2015	7.69	27.9
7/15/2015	7.67	27.8
7/16/2015	7.76	27.4
7/17/2015	7.79	27.4
7/18/2015	7.80	27.7
7/19/2015	7.76	27.9
7/20/2015	7.90	29.2
7/21/2015	7.95	29.6
7/22/2015	7.93	29.5
7/23/2015	7.77	29.8
7/24/2015	7.76	28.4
7/25/2015	7.88	28.5
7/26/2015	8.00	28.8
7/27/2015	7.86	29.2
7/28/2015	7.78	30.3
7/29/2015	7.80	30.1
7/30/2015	7.71	29.9
7/31/2015	7.65	29.7
8/1/2015	7.67	28.2
8/2/2015	7.61	28.3
8/3/2015	7.72	28.3
8/4/2015	7.67	29.4

Date	pH (SU)	Temp (°C)
8/5/2015	7.70	29.7
8/6/2015	7.70	28.6
8/7/2015	7.60	27.4
8/8/2015	7.61	27.9
8/9/2015	7.74	28.8
8/10/2015	7.80	27.9
8/11/2015	7.94	29.0
8/12/2015	7.05	28.5
8/13/2015	7.31	28.0
8/14/2015	7.64	27.6
8/15/2015	7.68	27.9
8/16/2015	7.83	29.1
8/17/2015	7.62	29.0
8/18/2015	7.91	29.3
8/19/2015	7.82	28.6
8/20/2015	7.65	28.2
8/21/2015	7.84	28.4
8/22/2015	7.52	27.4
8/23/2015	7.56	28.6
8/24/2015	7.50	28.1
8/25/2015	7.93	28.7
8/26/2015	7.82	28.0
8/27/2015	7.71	27.4
8/28/2015	7.70	28.1
8/29/2015	7.40	27.3
8/30/2015	8.05	28.0
8/31/2015	7.84	28.1
9/1/2015	7.85	28.3
9/2/2015	7.83	28.5
9/3/2015	7.91	29.1
9/4/2015	7.80	29.0
9/5/2015	8.09	29.3
9/6/2015	7.89	29.4
9/7/2015	7.33	27.4
9/8/2015	8.02	29.1
9/9/2015	7.90	28.5
9/10/2015	7.86	28.5
9/11/2015	7.70	27.9
9/12/2015	7.28	26.7
9/13/2015	7.69	26.0
9/14/2015	7.62	25.4
9/15/2015	7.81	25.2
9/16/2015	7.78	25.3
9/17/2015	7.79	25.4
9/18/2015	7.62	26.1

Date	pH (SU)	Temp (°C)
9/19/2015	7.20	25.9
9/20/2015	7.59	25.5
9/21/2015	7.60	25.1
9/22/2015	7.77	25.9
9/23/2015	7.81	25.3
9/24/2015	7.84	25.1
9/25/2015	7.62	24.8
9/26/2015	7.71	24.9
9/27/2015	7.75	24.6
9/28/2015	7.40	25.9
9/29/2015	7.85	26.5
9/30/2015	7.77	26.5
10/1/2015	7.69	24.9
10/2/2015	7.52	24.6
10/3/2015	7.50	22.0
10/4/2015	7.52	21.5
10/5/2015	7.32	23.3
10/6/2015	7.89	22.2
10/7/2015	7.68	22.9
10/8/2015	7.70	23.0
10/9/2015	7.70	22.7
10/10/2015	7.10	23.8
10/11/2015	7.53	23.1
10/12/2015	7.82	23.4
10/13/2015	7.84	23.2
10/14/2015	7.78	23.4
10/15/2015	7.75	23.0
10/16/2015	7.79	22.9
10/17/2015	7.41	22.3
10/18/2015	7.71	21.5
10/19/2015	7.16	21.1
10/20/2015	7.68	20.8
10/21/2015	7.70	21.0
10/22/2015	7.63	21.9
10/23/2015	7.44	21.1
10/24/2015	6.97	21.9
10/25/2015	7.45	21.4
10/26/2015	7.36	22.4
10/27/2015	7.79	21.6
10/28/2015	7.81	21.6
10/29/2015	7.70	22.3
10/30/2015	7.17	20.9
10/31/2015	7.28	19.8
11/1/2015	7.48	20.1

Date	pH (SU)	Temp (°C)
11/2/2015	7.43	21.9
11/3/2015	7.61	21.7
11/4/2015	7.63	21.9
11/5/2015	7.70	22.5
11/6/2015	7.63	21.7
11/7/2015	7.40	22.6
11/8/2015	7.55	21.8
11/9/2015	7.34	20.8
11/10/2015	7.75	21.2
11/11/2015	7.78	20.8
11/12/2015	7.79	20.8
11/13/2015	7.60	20.7
11/14/2015	7.57	19.6
11/15/2015	7.59	20.5
11/16/2015	7.54	20.6
11/17/2015	7.76	20.5
11/18/2015	7.71	20.5
11/19/2015	7.70	20.7
11/20/2015	7.47	19.6
11/21/2015	7.44	19.6
11/22/2015	8.02	19.4
11/23/2015	7.50	18.3
11/24/2015	7.62	18.3
11/25/2015	7.78	17.5
11/26/2015	7.75	18.1
11/27/2015	7.38	19.4
11/28/2015	7.64	19.7
11/29/2015	7.90	20.3
11/30/2015	7.44	19.1
12/1/2015	7.86	18.5
12/2/2015	7.77	18.5
12/3/2015	7.83	18.1
12/4/2015	7.32	17.9
12/5/2015	7.36	17.5
12/6/2015	7.57	17.8
12/7/2015	7.10	18.3
12/8/2015	7.74	18.6
12/9/2015	7.71	17.7
12/10/2015	7.66	17.7
12/11/2015	7.20	18.6
12/12/2015	7.51	18.6
12/13/2015	7.24	19.7
12/14/2015	7.47	20.5
12/15/2015	7.80	20.4
12/16/2015	7.72	20.0

Attachment 9 – Ammonia Criteria Calculations (STAT output)

12/30/2015 2:27:07 PM

Facility = Rush River WWTP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 2.63
WLAc = 0.595
Q.L. = 0.10
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.2005137055827
Average Weekly limit = 1.20051370558271
Average Monthly LImit = 1.20051370558271

The data are:

9

Attachment 10 – Stream Modeling of Dissolved Oxygen

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to RUSH RIVER.

File Information

File Name:	\\wdbrgdc05\wdbrgcommon$\Water Quality\Permits\VPDES Program\Fa
Date Modified:	January 14, 2016

Water Quality Standards Information

Stream Name:	RUSH RIVER
River Basin:	Rappahannock River Basin
Section:	04
Class:	III - Nontidal Waters (Coastal and Piedmont)
Special Standards:	None

Background Flow Information

Gauge Used:	Rush River at Washington, VA (01662500)
Gauge Drainage Area:	14.7 Sq.Mi.
Gauge 7Q10 Flow:	0 MGD
Headwater Drainage Area:	14.7 Sq.Mi.
Headwater 7Q10 Flow:	0 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	0 MGD
Incremental Flow in Segments:	0 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	25 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.327855 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	662 ft above MSL
Model End Elevation:	479 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to RUSH RIVER.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	RUSH RIVER WWTP EFFLUENT
VPDES Permit No.:	VA0091651

Discharger Flow Information

Flow:	0.06 MGD
cBOD5:	12 mg/l
TKN:	5 mg/l
D.O.:	6 mg/l
Temperature:	23.7 Degrees C

Geographic Information

Segment Length:	4.9 miles
Upstream Drainage Area:	14.7 Sq.Mi.
Downstream Drainage Area:	0 Sq.Mi.
Upstream Elevation:	662 Ft.
Downstream Elevation:	479 Ft.

Hydraulic Information

Segment Width:	5 Ft.
Segment Depth:	0.155 Ft.
Segment Velocity:	0.155 Ft./Sec.
Segment Flow:	0.06 MGD
Incremental Flow:	0 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Wide Shallow Arc
Character:	Mostly Straight
Pool and Riffle:	Yes
Percent Pools:	70
Percent Riffles:	30
Pool Depth:	0.2 Ft.
Riffle Depth:	0.05 Ft.
Bottom Type:	Large Rock
Sludge:	None
Plants:	Few
Algae:	Only On Edges

"Model Run For
C:\Users\caitlin.shipman@deq.virginia.gov\Documents\Facilties\VA0091651 Rush River WWTP\Regional Model 3.mod On 1/14/2016 9:57:17 AM"

"Model is for RUSH RIVER."
"Model starts at the RUSH RIVER WWTP EFFLUENT discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
0,	2,	0,	7.328,	25

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.06,	12,	5,	,6,	23.7

"Hydraulic Information for Segment 1"

"Length"	"Width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
4.9,	5,	.155,	.155

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"cBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.06,	6,	30,	8.66,	8.347,	23.7

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
1.2,	1.422,	20,	21.834,	.4,	.532,	0,	0

"Output for Segment 1"
"Segment starts at RUSH RIVER WWTP EFFLUENT"

"Total" "Dist."	"Segm." "Dist."	"DO"	"cBOD"	"nBOD"
"(mi)"	"(mi)"	"(mg/l)"	"(mg/l)"	"(mg/l)"
0,	0,	6,	30,	8.66
.1,	.1,	6.142,	28.364,	8.48
.2,	.2,	6.264,	26.817,	8.304
.3,	.3,	6.374,	25.355,	8.132
.4,	.4,	6.476,	23.972,	7.963
.5,	.5,	6.572,	22.665,	7.798
.6,	.6,	6.663,	21.429,	7.636
.7,	.7,	6.748,	20.26,	7.478
.8,	.8,	6.829,	19.155,	7.323
.9,	.9,	6.906,	18.11,	7.171
1,	1,	6.978,	17.122,	7.022
1.1,	1.1,	7.047,	16.188,	6.876
1.2,	1.2,	7.112,	15.305,	6.733
1.3,	1.3,	7.174,	14.47,	6.593
1.4,	1.4,	7.232,	13.681,	6.456
1.5,	1.5,	7.287,	12.935,	6.322
1.6,	1.6,	7.34,	12.23,	6.191
1.7,	1.7,	7.39,	11.563,	6.063
1.8,	1.8,	7.437,	10.932,	5.937
1.9,	1.9,	7.481,	10.336,	5.814
2,	2,	7.512,	9.772,	5.693
2.1,	2.1,	7.512,	9.239,	5.575
2.2,	2.2,	7.512,	8.735,	5.459
2.3,	2.3,	7.512,	8.259,	5.346
2.4,	2.4,	7.512,	7.809,	5.235
2.5,	2.5,	7.512,	7.383,	5.126
2.6,	2.6,	7.512,	6.98,	5.02

2.7,	2.7,	7.512,	6.599,	4.916
2.8,	2.8,	7.512,	6.239,	4.814
2.9,	2.9,	7.512,	5.899,	4.714
3,	3,	7.512,	5.577,	4.616
3.1,	3.1,	7.512,	5.273,	4.52
3.2,	3.2,	7.512,	5,	4.426
3.3,	3.3,	7.512,	5,	4.334
3.4,	3.4,	7.512,	5,	4.244
3.5,	3.5,	7.512,	5,	4.156
3.6,	3.6,	7.512,	5,	4.07
3.7,	3.7,	7.512,	5,	3.986
3.8,	3.8,	7.512,	5,	3.903
3.9,	3.9,	7.512,	5,	3.822
4,	4,	7.512,	5,	3.743
4.1,	4.1,	7.512,	5,	3.665
4.2,	4.2,	7.512,	5,	3.589
4.3,	4.3,	7.512,	5,	3.515
4.4,	4.4,	7.512,	5,	3.442
4.5,	4.5,	7.512,	5,	3.371
4.6,	4.6,	7.512,	5,	3.301
4.7,	4.7,	7.512,	5,	3.233
4.8,	4.8,	7.512,	5,	3.166
4.9,	4.9,	7.512,	5,	3.1

"END OF FILE"

Attachment 11 – Public Notice

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Rappahannock County, Virginia.

PUBLIC COMMENT PERIOD: March 24, 2016 to April 23rd, 2016

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board.

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Town of Washington, 485 Gay St., P.O. Box 7. Washington, VA 22747, VA0091651

NAME AND ADDRESS OF FACILITY: Rush River Wastewater Treatment Plant, 564 Warren Ave, Washington, VA 22747

PROJECT DESCRIPTION: The Town of Washington has applied for a reissuance of a permit for the public Rush River Wastewater Treatment Plant. The applicant proposes to treated sewage wastewaters from residential areas at a rate of 0.060 million gallons per day into a water body. The facility proposes to discharge treated sewage in the Rush River in Rappahannock County in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, Total Suspended Solids, Dissolved Oxygen, Carbonaceous Biological Oxygen Demand, *E. coli*, Total Phosphorus, Total Kjeldahl Nitrogen, and Total Nitrogen. The permit will require the following to be monitored and reported: Flow, Nitrate+Nitrite.

This facility is subject to the requirements of 9VAC25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Caitlin Shipman
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3859 E-mail: caitlin.shipman@deq.virginia.gov

Attachment 12 – Comment Received from DCR

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

Joe Elton
Deputy Director of Operations

Rochelle Altholz
Deputy Director of Administration and Finance

David Dowling
Deputy Director of Soil and Water and Dam Safety

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

February 5, 2016

Susan Mackert
DEQ – Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

Re: VA0091651, Rush River WWTP

Dear Ms. Mackert:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Rush River Stream Conservation Unit (SCU) is within the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Aarons Creek SCU has been given a biodiversity ranking of B4, which represents a site of moderate significance. The natural heritage resource associated with this site is:

Aquatic Natural Community (NP-Rapidan-Upper Rappahannock First Order Stream)	G3?/S3?/NL/NL

The documented Aquatic Natural Community is based on Virginia Commonwealth University's **INSTAR** (*Interactive Stream Assessment Resource*) database which includes over 2,000 aquatic (stream and river) collections statewide for fish and macroinvertebrate. These data represent fish and macroinvertebrate assemblages, instream habitat, and stream health assessments. The associated Aquatic Natural Community is significant on multiple levels. First, this stream is a grade B, per the VCU-Center for Environmental Sciences (CES), indicating its relative regional significance, considering its aquatic community composition and the present-day conditions of other streams in the region. This stream reach also holds a "Healthy" stream designation per the INSTAR Virtual Stream Assessment (VSS) score. This score assesses the similarity of this stream to ideal stream conditions of biology and habitat for this region. Lastly, this stream contributes to high Biological Integrity at the watershed level (6th order) based on number of native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species present.

Threats to the significant Aquatic Natural Community and the surrounding watershed include water quality degradation related to point and non-point pollution, water withdrawal and introduction of non-native species.

DCR supports the use of UV disinfection and other technologies as they become available to improve water quality.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact René Hypes at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Project Review Coordinator